

# **Lower Rio Grande, Rio Grande Estuary, and Lower Laguna Madre Bay and Basin Expert Science Team (Lower BBEST)**

University of Texas-Brownsville

Wednesday, August 17, 2011

## **MINUTES**

**Members present:** Hudson DeYoe, Chair; Dave Buzan, Vice Chair; Bob Edwards, Jude Benavides, Carlos Marin, Warren Pulich

### **Introductions**

Chair Dr. Hudson DeYoe welcomed members and guests to the meeting.

### **Approval of Minutes for the June 30-July 1, 2011 Meeting**

Minutes for the June 30-July 1, 2011 meeting were reviewed and approved as presented.

### **Project Administration**

#### **SAC Updates**

BBASC Chair Tony Reisinger presented an update on the BBASC. He noted that the BBASC would be meeting in September or October and that BBEST participation is requested. Meeting information will be distributed once a date is set.

#### **SAC Updates**

No update was available.

### **Budget Update**

Carla Guthrie, TWDB, stated that a TWDB Board Meeting is scheduled for Thursday August 18, 2011 and the funds requested for use by the BBEST in fiscal year 2012 will be considered at that time. If approved the funds would be available after September 1, 2011. She added that 2011 funds will be used for the contracts already submitted. Chair DeYoe discussed the information received from Ruben Solis, TWDB, on the 2012 funding and that an update on the status of these funds should be available after August 18, 2012. Ms. Guthrie reminded members to submit reimbursement requests in a timely manner. She stated that the committee had a little over 50% of the budget remaining. The contract for the isotope project was mailed to UTPA for signature.

### **Updates on Qualitative Summaries**

Chair DeYoe reviewed the reasoning behind using a qualitative approach for certain areas.

Member Dave Buzan reported that for the Resacas, some additional research and writing will be completed soon.

### **Discussion of Final Report Content**

Chair DeYoe discussed the work previously done on the outline which was fashioned after the GSA report. Member Dr. Warren Pulich did some additional work to tailor the outline to the Laguna Madre and tidal Rio Grande and those sections based on an analytical approach. Mr.

Buzan added that for the Bahia Grande, San Martin Lake, Resacas, and Rio Grande, there would be qualitative summaries describing the hydrology, and the relationship between hydrology and the ecological health of the systems including what is known and not known. He talked about the adaptive management section which identifies the questions that need to be addressed and requires additional research. He mentioned that he completed a draft introductory to the report as requested.

Members listened to comments from BBASC in attendance concerning their particular interests. Mr. Buzan explained to these stakeholders that the process will result in environmental flow standards that will apply to only new permits.

Ms. Kellye Rila, TCEQ, discussed the importance of the BBEST and BBASC recommendations that will result in environmental flow standards to be applied as a component of new and amended water rights. She also mentioned the importance of adaptive management in developing alternative means to increase flows in a fully regulated basin. Members discussed the conversion of water rights in the lower Rio Grande from irrigation to municipal use and whether these new standards would impact future applications for a similar change of use, reuse, a move of a diversion point from the main stem to a tributary, and reuse of groundwater based effluent.

Members continued discussing the outline of the final report. Dr. Pulich talked about the elements found in other reports that are not applicable since the focus of the committee is the freshwater inflows to the bay and estuaries. He noted that from the previous discussions, only a qualitative analysis will be done on the Arroyo Colorado limited to a discussion of the hydrology and how it effects the inflows to the Laguna Madre. The elements of the freshwater inflow analysis for the Laguna Madre and Rio Grande tidal that will be applied are as follows:

- Information analysis;
- Data synthesis;
- Approaches used for the analyses;
- Methodology adopted;
- Special studies needed (ex. Nitrogen Study)
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**Salinity and Nutrients:** Previous discussions on salinity suggested that salinity is not a good indicator for defining the inflow needs of the Laguna Madre. A thorough historical analysis of salinity and how the Laguna has changed will be done. Dr. Pulich discussed nutrient content of inflows and how it may be used to define a series of flow regimes. A study of historical trends in salinity and nutrients is needed. Dr. Pulich noted that the hydrology will come from the data provided by the TWDB and the data gathered by members Dr. Jude Benavides and Dr. Carlos Marin will for each area. He said that the committee needed to evaluate the effect of the high pulse flows entering the Laguna Madre.

**Estuarine Species and Habitats:** A study of how species and habitats in the lower Laguna Madre respond to salinity and/or nutrients

Focal species: Previous discussions favored sea grass (submerged vegetation) in the Laguna. Members are awaiting recommendations from member Dr. Bob Edwards to determine if white shrimp and/or blue crab will also be used.

Dr. Pulich noted a need to specify a target area in the system around the Arroyo Colorado, the source of the freshwater inflow. This area would be where the quantitative analysis would be done.

Synthesis: Members need to define over the period of record how often a specific inflow regime has occurred on a seasonal basis. Flow regimes will be identified based on the location of the salt wedge and where it occurs historically in the river based on indicator species such as vegetation or a specific faunal species.

Dr. Pulich presented a conceptual scheme of how flow occurs historically in the estuary. He explained how the nitrogen isotope will be used to determine where the flow of the Arroyo goes.

### **Water Balance for Lower Rio Grande (Marin and Benavides)**

Dr. Benavides presented an update on the status of the water balance for the Lower Rio Grande. He discussed the proposed contracts for technical support that will be considered at the TWDB Board Meeting. The contracts would also address compiling streamflow data from IBWC, the agricultural return flow rate from the diversion data, and the rainfall runoff characteristics of the Arroyo Colorado. He discussed the need for each of these data.

Dr. Benavides discussed a graph of the flow at the Brownsville gage over the period of record and discussed how similar graphs can be derived for specific periods and/or seasons as an example of the work that will be completed. He also voiced concern with the irrigation withdrawal data from the IBWC website since if the data was actual river flow it should reflect the pulses seen at the Brownsville gage. Mr. Buzan noted that from the presentation, it did not look feasible to retrieve information on the flood frequency pre-dam construction. He was interested in information on when, how and how much water is entering the Rio Grande tidal and the Arroyo Colorado and felt the work to be completed will be a better estimate than is presently available from the TWDB. Members suggested Kirk Kennedy and Sam Vaughn for consideration as consultants for the contract work.

### **Arroyo Nutrient-Flow Relationships (DeYoe)**

Chair DeYoe updated members on the work completed on the Arroyo nutrient-flow relationship. The work focused on how much nutrient flow exists, when it occurs, where the flow is going, and the potential impacts of the flow. Members talked about the impact of irrigation return flows and waste water discharge into the stream downstream of the reference gage on the Arroyo. Mr. Buzan asked if Cory Horan, TCEQ, could make the self-reported data from the shrimp farms available to the committee. Chair DeYoe noted there was another possible site he could use as a reference gage.

Members asked Mr. Horan to look into setting up a FTP website to facilitate information dissemination and assist in completion of the final BBEST report. He will report back to the group at the next meeting.

## **Review Assignments and Schedule**

Chair DeYoe reviewed the tentative schedule for upcoming meetings. The final report should be provided to the stakeholders on March 1, 2012. To allow adequate time for the contractor to finalize the report, members should plan on submitting the draft report to the contractor by February 1, 2012.

Members need to agree on the flow regimes for the Rio Grande tidal and lower Laguna Madre by January, 2012. The required analysis needs to be complete in December, 2011. Members discussed the ongoing studies, relative deadlines, and where they will fit in the report.

Chair DeYoe discussed the need for a 2012 budget. Carla Guthrie, TWDB, noted that the 2012 funding will be used following the existing budget. However, scopes of work are needed for the contracts submitted for approval and to be considered in the future. Individual assignments are as follows:

- Lower Laguna Madre Analytical Lead – DeYoe, Pulich
- Hydrology Analytical Lead – Benavides, Marin
- Resacas Qualitative Description – Buzan (to submit to Benavides)
- San Martin Lake Qualitative Description – Buzan
- Rio Grande Above Tidal Qualitative Description – Pulich, DeYoe, Edwards
- Rio Grande Tidal Analytical Lead – Edwards (Buzan will assist)
- Section 1 draft complete – Buzan
- Salinity-Nutrient Plumes related to Flow/Nutrient Loading – DeYoe, Buzan
- Rio Grande Diversion/ Flow Direction Aerial photos – Buzan

## **Set Next Meeting**

The next meeting is scheduled for Friday, September 19, 2011 at University of Texas-Pan American, Edinburg, Texas. The following meetings are tentatively scheduled for the dates listed below. Members will be notified with the time and location.

- Monday, October 24, 2011
- Monday, November 28, 2011
- Friday, December 16, 2011 (conference call)
- Monday, January 16, 2011